Congenital Epulis

Oren Lapid, MD*; Ruthy Shaco-Levy, MD‡; Yuval Krieger, MD*; Leonid Kachko, MD‡; and Amiram Sagi, MD*

ABSTRACT. Epulis is a rare tumor of the newborn, also known as granular cell tumor of the newborn or Neumann's tumor. This tumor arises from the mucosa of the gingiva, most commonly from the anterior part of the maxillary alveolar ridge, and is typically seen as a mass protruding out of the newborn child's mouth, which may interfere with respiration or feeding. Epulis is seen only in the newborn and is a different entity from other granular cell tumors. The tumor has a marked female preponderance of 8:1. The recommended treatment is prompt surgical resection. Recurrences of the tumor and damage to future dentition have not been reported, suggesting that radical excision is not warranted.

A newborn female with such a mass is described. The tumor was resected using a carbon dioxide laser; the postoperative course was uneventful. On histologic examination, it was composed of diffuse sheets and clusters of polygonal cells containing small round to oval nuclei and abundant coarsely granular cytoplasm. The tumor cells stained positive for vimentin, and negative for S100-protein, actin, desmin, laminin, keratin, estrogen, and progesterone receptors. Electron microscopic examination showed granular cells containing heterogeneous electron-dense granules, lysosomes, and cytoplasmic lipid droplets. The clinical and microscopic features of such tumors are reviewed. Pediatrics 2001;107(2). URL: http://www.pediatrics.org/cgi/content/full/107/2/e22; congenital epulis, granular cell tumor, gingival granular cell tumor.

ABBREVIATIONS. GCT, granular cell tumor; GGCT, gingival granular cell tumor.

Epulis, or congenital granular cell tumor (GCT), is a rare tumor of the newborn. It is seen as a mass arising in the mouth from the alveolar ridge; this mass may interfere with respiration or feeding. A case of congenital epulis is reported; the tumor was resected using a carbon dioxide laser. The clinical aspects as well as the morphologic, histologic, and electron microscopic features of this lesion and its treatment are reviewed.

From the Departments of *Plastic Surgery and ‡Pathology, the Soroka University Medical Center Ben-Gurion University of the Negev, Negev, Israel.

Received for publication May 22, 2000; accepted Sep 26, 2000.

Reprint requests to (O.L.) Department of Plastic Surgery, Soroka Medical Center, 151, Beer-Sheba 84101, Israel. E-mail: lapid@actcom.co.il

PEDIATRICS (ISSN 0031 4005). Copyright © 2001 by the American Academy of Pediatrics.

Fig 1. The mass is seen protruding from the girl’s mouth (lateral view).
a congenital GCT. Macroscopically, the external surface was slightly irregular and the cut surface was homogenous and tan (Fig 3). Histologically, it was composed of diffuse sheets and clusters of polygonal cells containing small round to oval nuclei and abundant coarsely granular cytoplasm. There was a delicate plexiform network of capillaries (Figs 4 and 5).

The tumor cells stained positively with Periodic acid-Schiff reagent and the staining was not removed by pretreatment with diastase.

Immunohistochemical stains gave the following results: the tumor cells were diffusely and strongly positive for vimentin, and negative for S100-protein, actin, desmin, laminin, keratin, estrogen, and progesterone receptors.

Portions of the tumor were obtained fresh and immediately fixed in 2.5% cold buffered gluteraldehyde and then processed routinely for electron microscopy. Electron microscopic examination showed granular cells containing heterogeneous electron-dense granules, lysosomes, and cytoplasmic lipid droplets (Fig 6). The cells had irregular cytoplasmic borders with small extensions. There was no basement membrane associated with the granular cells. There was no evidence of any epithelial differentiation and no evidence of Schwannian differentiation as well.

**DISCUSSION**

Epulis is also known as GCT of the newborn, or as Neumann’s tumor after the first published case.1 This tumor is rare, as reviewed by Zuker and Buenecha2 in 1993, who described only 167 reported cases.

The tumor is seen only in the newborn and is a
different entity from other GCTs. The tumor has a marked female preponderance of 8:1. It arises from the mucosa of the gingiva most commonly from the anterior part of the maxillary alveolar ridge, although it has been described as arising from the mandibular gingiva as well as from several locations simultaneously. Reported size varies from several millimeters to 7.5 cm.

There is a striking histologic similarity of granular cells of gingival granular cell tumors (GGCTs) and the far more common GCT of any other site. There are several distinguishing features of GGCT, such as predilection for newborn females, anterior maxillary location, presence at birth, plexiform arrangement of capillaries, and lack of pseudopodiamiantomatous hyperplasia. However, GGCTs contain cells that are virtually indistinguishable by light microscopy alone from those seen in GCTs. Although Schwann cells are considered to give rise to most GCTs, and, hence, these tumors show diffuse and strong staining for S100-protein, the histogenesis of GGCTs remains unclear. A few theories exist as to the origin of GGCTs, and the most popular ones favor gingival stromal (mesenchymal) origin and odontogenic epithelial origin. The ultrastructural and immunohistochemical findings in our case are in agreement with those supporting a mesenchymal origin; the cells have features of histiocytes and fibroblasts. The ultrastructural findings of the tumor that we describe are clearly different from those in GCT (irregular cell borders with extensions, lack of basement membrane, and absence of Schwannian cells). Furthermore, as in the case described by Larralde et al., the tumor cells in our case were reactive for the macrophage marker CD68. They were also diffusely and strongly positive for vimentin. The tumor cells in our case did not react with S100-protein, and this further supports the contention that GGCT and GCT arise from different cells of origin.

Because GGCT is a congenital tumor in which spontaneous regression has been reported, we performed immunohistochemical stainings for estrogen and progesterone receptors, to see whether the tumor is influenced by maternal hormones. The results of both of these stainings were negative. Although the development of the tumor in the uterus and the higher incidence in females imply a hormonal mechanism, it probably takes place through different pathways.

**CONCLUSION**

Our case provides additional evidence that GGCT derives from a mesenchymal origin, unlike the GCT of any other site.

The recommended treatment is prompt surgical resection. Recurrences of the tumor and damage to future dentition have not been reported, suggesting that radical excision is not warranted.

The tumor is often misdiagnosed before surgery because of its rarity and lack of awareness by clinicians. The differential diagnosis includes: hemangioma, lymphangioma, fibroma, rhabdomyoma, and heterotopic gastrentestinal cysts.

In our case the tumor was not diagnosed by ultrasound on the 25th week of gestation, suggesting that it may have developed later. There have been reports of prenatal diagnosis and in those cases, in which the tumor was detected late in gestation.

**REFERENCES**


---

**Fig 5.** High-power microscopy ×400. Polygonal cells with granular cytoplasm and small round nuclei.

**Fig 6.** Electron microscopy ×10,000. Electron-dense granules and numerous lysosomes within the cytoplasm.
Congenital Epulis
Oren Lapid, Ruthy Shaco-Levy, Yuval Krieger, Leonid Kachko and Amiram Sagi
Pediatrics 2001;107;e22
DOI: 10.1542/peds.107.2.e22

Updated Information & Services
including high resolution figures, can be found at:
/content/107/2/e22.full.html

References
This article cites 9 articles, 1 of which can be accessed free at:
/content/107/2/e22.full.html#ref-list-1

Citations
This article has been cited by 2 HighWire-hosted articles:
/content/107/2/e22.full.html#related-urls

Subspecialty Collections
This article, along with others on similar topics, appears in the following collection(s):
Surgery
/cgi/collection/surgery_sub

Permissions & Licensing
Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
/site/misc/Permissions.xhtml

Reprints
Information about ordering reprints can be found online:
/site/misc/reprints.xhtml
Congenital Epulis

Oren Lapid, Ruthy Shaco-Levy, Yuval Krieger, Leonid Kachko and Amiram Sagi

*Pediatrics* 2001;107;e22
DOI: 10.1542/peds.107.2.e22

The online version of this article, along with updated information and services, is located on the World Wide Web at:
/content/107/2/e22.full.html